

### **REMARKS**

Favorable reconsideration and allowance of the present application in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1-16, 19, 21-28, and 30-47 remain in this application, including independent claims 1, 23, 33, and 43. Claims 1, 23, 33, and 43 are currently being amended, while dependent claims 17-18, 20, and 29 were previously cancelled. Independent claim 1, for instance, is directed to a method for forming a tissue product, wherein a liquid furnish of cellulosic fibers is formed into a multi-layered wet web and wherein a debonder and at least one latex are applied to the furnish, the wet web, or combinations thereof. The debonder includes an imidazoline quaternary compound or an ester-functional quaternary ammonium compound. The latex has a glass transition temperature of less than about 30°C and is applied in an amount less than about 60 pounds per ton of the dry weight of the cellulosic fibers. After application of the debonder and the latex to the furnish, the wet web, or combinations thereof, the wet web is dried so that at least one outer layer of the dried web contains the latex-treated cellulosic fibers. Additionally, greater than about 60% of the latex is retained on the cellulosic fibers. Finally, claim 1 as amended herein recites that the tissue product exhibits a level of slough that is less than the level of slough exhibited by an otherwise identical tissue product formed without applying the at least one latex to the liquid furnish, the wet web, or combinations thereof. Applicants respectfully submit that the current claim amendments find support in the specification as filed, particularly in Example 7 at pages 31-37 of the specification.

Applicants appreciate the courtesies extended by the Examiner during the telephone interview held with Applicants' representative on June 15, 2004, the substance of which is described in the Interview Summary attached to the instant Office Action.

In the Office Action, independent claims 1, 23, 33, and 43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either U.S. Patent No. 5,427,696 or 5,510,000 to Phan, et al. and U.S. Patent No. 3,844,880 to Meisel, et al., optionally with U.S. Patent No. 5,437,766 to Van Phan, et al. In particular, the Office Action noted at

page 3 how in Applicants' previous amendment, no specific values were claimed to define what was meant by a "relatively low level of lint and slough."

Phan, et al. '696 is directed to a biodegradable chemical softening composition for treating fibrous cellulose materials, while Phan, et al. '000 is directed to paper products containing a vegetable oil-based chemical softening composition for use in papermaking. The biodegradable softening composition of Phan, et al. '696 must contain a mixture of (1) a quaternized ester-amine compound and (2) a polyhydroxy compound selected from the group consisting of glycerol, and polyethylene glycols and polypropylene glycols having a weight average molecular weight from about 200 to 4000.

Applicants respectfully submit that neither Phan, et al. '696 nor Phan, et al. '000 discloses or suggests Applicants' claimed tissue products or methods of forming tissue products, which include the application, to a liquid furnish of cellulosic fibers, a multi-layered wet web, or combinations thereof, of (1) a debonder, wherein the debonder includes an imidazoline quaternary compound or an ester-functional quaternary ammonium compound, and (2) a latex, which has a glass transition temperature less than about 30°C, in an amount less than about 60 pounds per ton of the dry weight of the cellulosic fibers, such that greater than about 60% of the latex is retained on the cellulosic fibers, such that at least one outer layer of a dried web contains the latex-treated cellulosic fibers, and such that the tissue product exhibits a level of slough that is less than the level of slough exhibited by an otherwise identical tissue product formed without applying at least one latex to the liquid furnish, the wet web, or combinations thereof.

Nowhere in the disclosures of Phan, et al. '696 and Phan, et al. '000 is slough or lint ever discussed, and these patents do not disclose or suggest formulating a method for forming a tissue product so as to reduce the level of slough exhibited by the tissue product. Yet, through using the specific combination of steps covered by the pending claims—i.e., applying a debonder that includes an imidazoline quaternary compound or an ester-functional quaternary ammonium compound, applying at least one latex having a  $T_g$  less than about 30°C, etc.—the present inventors have discovered that a tissue

product is formed that exhibits a level of slough that is less than the level of slough exhibited by an otherwise identical tissue product formed without applying at least one latex to the cellulosic fibers.

By way of example, Table 8 on page 37 of Applicants' specification illustrates a 22% decrease in slough for Sample 17 when compared to Sample 16, an otherwise identical tissue product that was not applied with the Airflex A-105 latex used in Sample 17. Likewise, Table 8 illustrates a 28% reduction in slough for Sample 18 when compared to Sample 16, wherein Sample 18 was formed identically to Sample 17 except that its latex was Dow Chemical's DL-239. Table 8 shows that tissue products made according to Applicants' present claims unexpectedly remain soft and strong while exhibiting significantly lower levels of slough.

Similarly, Table 7 on page 35 of Applicants' specification includes data for Samples 13-15, tissue products that were formed identically to Samples 10-12, except that they were applied with the Airflex A-105 latex. Thus, Samples 13-15 were formed according to Applicants' claimed invention. Table 8 shows that the tissue products of Samples 13-15 remained soft (average panel stiffness for Samples 13-15 of 2.7 as compared to average panel stiffness for Samples 10-12 of 2.5) and strong while exhibiting significantly lower levels of slough, particularly, an average decrease in slough production of about 33%. Generally, then, tissue products formed according to Applicants' pending claims exhibit significantly reduced slough (by way of example, at least a 10% reduction) while maintaining about the same strength and/or softness, none of which is disclosed or suggested by Phan, et al. '696 or Phan, et al. '000.

Meisel, et al. is generally directed to a method of producing cellulosic sheet materials from a cellulosic fibrous slurry to which there is added sequentially a cationic surface active agent and an anionic or nonionic resin, which resin further requires a deposition aid. Meisel et al. does not disclose or suggest several aspects of Applicants' claims, such as the formation of a multi-layered wet web. Further, Meisel, et al. does not disclose or suggest a method of forming a tissue product that includes the application, to a liquid furnish of cellulosic fibers, a wet web, or combinations thereof, of (1) a debonder, wherein the debonder includes an imidazoline quaternary compound or

an ester-functional quaternary ammonium compound, and (2) a latex, which has a glass transition temperature less than about 30°C, in an amount less than about 60 pounds per ton of the dry weight of the cellulosic fibers, such that greater than about 60% of the latex is retained on the cellulosic fibers, such that at least one outer layer of a dried web contains the latex-treated cellulosic fibers, and such that the tissue product exhibits a level of slough that is less than the level of slough exhibited by an otherwise identical tissue product formed without applying at least one latex to the furnish, the web, or combinations thereof. In particular, Meisel, et al. does not contain any reference whatsoever to slough or lint.

Again, by way of example, portions of Applicants' specification illustrate how using a debonder and a latex according to the pending claims leads to higher latex retention percentages on fibers used to make Applicants' claimed tissue product. And at pages 21-22, Applicants' specification points out that controlling the latex retention percentages to make such percentages higher leads to better inhibition of the production of slough from the web. Thus, retaining the latex on the cellulosic fibers leads to the latex forming a flexible bond with the cellulosic fibers such that a resulting web is flexible and strong, while also producing low amounts of lint and slough (by way of example, amounts of slough that are at least 10% less than amounts generated by otherwise identical tissue products made without the addition of Applicants' claimed latex). (Appl. at page 4).

In short, then, Applicants respectfully submit that the Phan, et al. '696 and '000 references, alone or in conjunction with Meisel, et al., do not disclose or suggest the synergistic effect of the claimed methods of independent claims 1 and 23 or the claimed tissue products of independent claims 33 and 43, wherein the combination of applying (1) a debonder, where the debonder includes an imidazoline quaternary compound or an ester-functional quaternary ammonium compound and (2) a particular amount of at least one very specific latex (a latex having a glass transition temperature of less than about 30°C) to a liquid furnish of cellulosic fibers, a multi-layered wet web made from such cellulosic fibers, or combinations thereof, results in a tissue product wherein greater than 60% of the latex applied to the furnish or web is retained on the

cellulosic fibers and wherein the tissue product exhibits a level of slough that is less than the level of slough exhibited by an otherwise identical tissue product formed without applying at least one latex to the furnish, the web, or combinations thereof. Thus, Applicants respectfully submit that the claims patentably define over the references cited in the Office Action.

Various dependent claims were rejected under Section 103(a) as being unpatentable over Phan, et al. '696 or '000 and Meisel, et al., optionally with Van Phan, et al. Additionally, dependent claims 4, 25, 37, and 47 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Phan, et al. '696 or '000 and Meisel, et al., optionally with Van Phan, et al., and further in view of U.S. Patent No. 6,129,815 to Larson, et al. or U.S. Patent No. 5,851,352 to Vinson, et al. Applicants respectfully submit, however, that at least for the reasons indicated above relating to corresponding independent claims 1, 23, 33, and 43, the dependent claims patentably define over the references cited in the Office Action. However, Applicants also note that the patentability of the dependent claims does not necessarily hinge on the patentability of independent claims 1, 23, 33, and 43. In particular, it is believed that some or all of these dependent claims may possess features that are independently patentable, regardless of the patentability of claims 1, 23, 33, and 43.

Applicants respectfully submit that the present claims patentably define over all of the prior art of record for at least the reasons set forth above. As such, it is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Should any issues remain after consideration of this Amendment, Examiner Chin is invited and encouraged to telephone the undersigned. Otherwise, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Appl. No. 10/005,882  
Amdt. Dated December 22, 2004  
Reply to Office Action of August 25, 2004

Please charge any additional fees required by this Amendment to Deposit  
Account No. 04-1403.

Respectfully requested,

DORITY & MANNING, P.A.

A handwritten signature in cursive script, appearing to read "Tara E. Agnew", written over a horizontal line.

Tara E. Agnew  
PTO Registration No. 50,589

DORITY & MANNING, P.A.

P. O. Box 1449

Greenville, SC 29602-1449

Phone: (864) 271-1592

Facsimile: (864) 233-7342

Date: Dec. 22, 2004